



PGES

All-Party Parliamentary Group
for Energy Studies
Founded in 1980

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SC ESNZ Inquiry 7832 Keeping the power on: our future energy technology mix **Call for Evidence 3188 Submission reference ELN480285**

Response from All-Party Parliamentary Group for Energy Studies (PGES)

The All-Party Parliamentary Group for Energy Studies (PGES) was formed in 1980 with the aim to inform parliamentarians of the day on the energy issues of the day. We have representation of all major parties from Ian Liddell-Grainger MP who is in the Chair and other Council members.

We are the only Parliamentary Group to embrace all areas of the energy industry, providing a forum for high-level discussions of key energy issues facing the country. Our members include Parliamentarians from both Houses, leading academic institutions and industry representatives ranging from SMEs to multi-national corporations.

Unlike other APPGs, we are not a single-issue lobbying group – our purpose is to provide valuable insights into energy markets to inform good policy making without favouring any particular technology or approach.

The new Select Committee has launched four inquiries into the energy sector, presenting an opportunity for PGES to fulfil its objectives. Our Associate Membership, both industrial and academic, has knowledge and experience in all sectors of the Inquiry, which we would like to share.

1. Is the energy sector open enough to new generation technology?

The adoption of new energy sources is discussed frequently, but changes relatively little. By focussing on generation and energy costs being low, we encourage the wasteful use of a finite and valuable resource.

Wind power has been adopted and cited as the answer to decarbonisation, but its potential is not fully realised, due to regulations, constraints and lack of ambition. Much wind power is spilled (wasted) because there is no way to use it when generated so regulations “constrain” the output.

Solar power has grown to a degree, but could be increased enormously with simple changes to Building Regulations.

Small Nuclear Reactors are not yet ready for market, design is complete, but none built. From a UK perspective the Rolls-Royce SMR is going through the generic design approval process for approval by the regulator, the Office for Nuclear Responsibility. Rolls Royce expects approval by mid 2024 and to be able to produce power by 2029ⁱ.

Internationally, the Nuscale design has been approved by the US Nuclear Regulatory Commission, so Nuscale is beginning manufacture. IAEA statesⁱⁱ: “There are currently four SMRs in advanced stages of construction in Argentina, China and Russia, and several existing and newcomer nuclear energy countries are conducting SMR research and development.”

Our main rivers have little generation capability. In winter when the demand is at its highest, rivers also flow at their fastest. Costs to build need to be investigated.

Capacity constraint takes too long to overcome, especially if the physical requirements to allow spare capacity are not in place. However, anticipatory investment by network operators is not acceptable under RIIO 2, despite the Uncertainty Mechanism.

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Any generation planned, will not be able to supply to the grid for many years, due to the log jam in the queue for such approvals. This is not a static queue, but represents the gap between projects proposed and those approved. Reviewing applications in order of date applied makes no sense, as projects in critical areas will be held back by those with little urgency. ^{iiiiv}

Virtual Power Plants (VPPs) have to bid in to Contracts for Difference, but there should be a distinction between those that truly reduce the demand, like Automated Demand Response, instead of replacing it with dirtier generation plant beyond the meter. Why give such value to fulfilling the peak demands, instead of removing the need for them?

Battery storage also suffers, because the National Grid balancing system favours fewer larger actions over multiple smaller ones. Both Automated Demand Response^v and battery storage offer a VPP through aggregators. Both these technologies are mature and on the market now.

Geothermal energy is available in every area where mining was the foundation for the Industrial Revolution (ie most cities). This represents a great source of energy in the form of heat. This can be used either in distribution systems, or converted to other forms for use or storage. ^{vi}

Finally, Micro CHP (Combined Heat and Power) merits a further look if the gas main is to be fossil free. The concept of “free” electricity as a waste product of heat is still desirable and it would add to resilience of the grid.

2. Does the Government sufficiently support development of innovative energy infrastructure?

No. Politics is, of necessity, short term in its thinking, however, technology and the investment that sustains it, long term. Policy cannot have everything - and sound bites do not inform. We need coherent policy and clear explanations of the options from legislators. Clear signals are needed from Government to unlock capital investment. Certainty of adoption reduces the risk and therefore the cost of finance. Make “no regrets” investments now as finance is available, but needs consistent policy to unlock it.

The UK power network is uninvestable without support due to policy uncertainty and market volatility, however, there is no liquid market for electricity. Subsidies are not performing as expected, subsidies originally intended to support immature technology now replace a mechanism to lay off risk and secure investment. (Eg CfD in Renewables, Capacity Contracts for Fossil Fuels). There is no justification for assuming the subsidy costs will fall – they will be expected to provide a level of return that makes the investment worthwhile.

Unless the means of production are owned by the state, then the two remain inimical. Without clear communication and understanding between the two, plus support from the consumer, this situation will not change. Innovative technological development at home will be throttled and the country driven to dependence on imported solutions. A bleak prospect, especially as the world at large rejigs its energy to meet climate change imperatives.

While there is no end of technological innovation – much of it British - where is the renewables energy supply and associated infrastructure essential to fully replace fossil fuels? This is a problem for other countries too, but they are resorting to imported LNG or coal to fill the void.

3. Is the Government's plan for energy security sufficiently long term?

When looking at technologies for immediate adoption, this is unexpected, however, for energy security for the long term, it is essential that the Government **make a plan, commit to the plan, stick to the plan and bind successors to the plan. A plan for short, medium and long term must be developed and announced^{vii}**, with clear signals for industry to invest in projects that take longer than a single parliament. Use all-party collaboration to create legislation that encourages technical solutions, allows options to suit different locations and endures. Use a National Framework to encourage to empower effective local and regional bodies' energy plans.

APPGs are designed to develop consensus across the political spectrum. PGES has seen that Net Zero energy policy is common ground for all parties, but the drive to Net Zero has its necessity questioned frequently at the first opportunity.

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Care must be taken in announcements, to ensure that fossil fuel dependence is reduced, instead of statements banning equipment types. (Eg For boilers or Internal Combustion Engines, ban the fossil fuel and displace it progressively)

Much of the current UK nuclear generation stock and thermal fleet are scheduled for closure. Specific clear timelines need to be produced, reviewing the potential to extend the life of some plant, or to assess their closure on realistic safety grounds. Our nuclear fleet closure schedule needs to be reviewed in light of reasoned expectations of safety and geological occurrences. (Agreement needs to be reached between EdF and the Office for Nuclear Responsibility to reach realistic decisions)

North Sea licences will need to be ramped up, allowing localised use of those assets, reducing imports.

Large scale build of nuclear generation is required to redress the loss of base load generation, adopting the quickest technology, for example, ABWRs have been completed within 5 years in Japan, on time and on budget.

4. What current technologies could usefully be deployed at scale to deliver better energy security in the UK?

Generation from SMRs should be encouraged.

Generation in our rivers and on all new build homes and commercial buildings should be introduced immediately.

Control and appliance technologies should be promoted within the built environment to reduce wasted heat, no matter from which source it is derived.

An announcement should be made regarding the future of gas. A blend of hydrogen should be introduced as soon as possible. This will enable both heating and transport to develop their hydrogen equipment, in readiness for a full conversion to hydrogen.

HVO displacement of fossil fuel for HGVs, heating, etc. This is a stepping stone for the transition to H₂ or electric. It can be introduced by percentages over years, similar to petrol. Ban the fossil fuel, not the equipment.

Batteries, currently installed and accepted by the industry are disadvantaged by the National Grid algorithm used to determine what power is drawn from which source, in favour of traditional higher carbon sources. Batteries, however, are not well suited to fulfilling grid scale or longer duration supplies and will draw heavily on finite mineral resources.

5. Are there technologies that have not been able to develop their potential and should be abandoned?

None. However, a timetable of what they need to achieve and supporting decisions should be made more clear, allowing industry to invest and manufacture.

6. What energy generation mix will get us to net zero the quickest in the most affordable way?

The Government should commission new nuclear generation now. Nobody expects civil security to be funded by anybody other than the Governments (police, military, fire etc), so why should they expect energy security to be funded by industry?

The most effective change that the Government can make is to pass legislation to decarbonise the fuel used by consumers for heat, light and movement – gas, oil or electricity. To date, the Government has mandated lower carbon petrol, lower carbon electricity, but has made no clear step towards lower carbon gas. By changing the mandated fuel, one decision by Government affects millions of uses. This is far quicker and lower cost than relying on millions of decisions to be made by consumers, which is slow, unreliable and costly.

However, it is widely acknowledged that the lowest cost step towards net zero is to eliminate wasted energy. The IEA said, “Energy efficiency is the “first fuel”: reining in the scale of this unprecedented challenge, supporting net zero energy goals at lower costs, and delivering a wide array of benefits for society.”^{viii} before CoP26 in Glasgow.

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Electricity generation from all low carbon sources needs to be encouraged. Distributed generation from every new building should be required by Building Regulations. (See PGES response to Call for Evidence 3186 Heating our Homes)

At present, one of the lowest cost method of generation appears to be onshore wind. In addition, finding a way to avoid wasting (spilling) the opportunity for wind generation would be highly effective, whether by converting to chemical or potential energy. This entails reinforcing the grid infrastructure and having connections available.

7. Are the energy solutions universal across the UK or are there regional and local approaches on fuel and energy?

This is the first reference to fuel! Oil and gas must also be considered to avoid an over dependence of electricity, in turn causing huge peaks in demand, subsequent over capacity and back up generation. By default, when electricity is in short supply, the source of first resort is usually the highest in carbon content.

The Government should legislate nationally, making allowance for local or regional champions to drive the changes needed. Cross-Government inter-departmental policy and joint working is necessary to enable a UK energy system to be re-established. Industry can supply the necessary technology, but it needs to know what / where / when from Government and be assured that this is backed by a strong regulator; that the rules will not be changed unilaterally and without consultation or warning; and that Departmental actions are co-ordinated.

To overcome any barriers of adoption due to the expected lack of skills, encourage more people to take up traditional STEM based careers under the new heading of GREEN. Those skills required for installing and servicing vehicles, HVAC systems and building, will be the same whether they consume fossil fuel or its replacement. The same people who are currently disparaged as boiler slingers, will be the self-same installers of heat pumps and hydrogen equipment.

Tax breaks should be available to industry for training initiatives, across the spectrum of academic levels, including sponsored apprenticeships, degrees and student places.

PGES stands by its Energy Policy Priorities developed last year^{ix} – [see attachment](#) – the priorities have not changed, even though the departments have.

To avoid sleepwalking into disaster, PGES recommends action now, as 2030 is now less than seven years away. Do not let pursuit of the perfect stand in the way of the good. Adverse Climate Change effects will not wait for an election.

ⁱ [https://www.reuters.com/business/energy/rolls-royce-expecting-uk-approval-mini-nuclear-reactor-by-mid-2024-2022-04-19/#:~:text=April%2019%20\(Reuters\)%20%2D%20A,Small%20Modular%20Reactors%2C%20old%20Reuters.](https://www.reuters.com/business/energy/rolls-royce-expecting-uk-approval-mini-nuclear-reactor-by-mid-2024-2022-04-19/#:~:text=April%2019%20(Reuters)%20%2D%20A,Small%20Modular%20Reactors%2C%20old%20Reuters.)

ⁱⁱ <https://www.iaea.org/topics/small-modular-reactors>

ⁱⁱⁱ <https://www.theguardian.com/business/2023/jun/02/british-energy-developers-projects-national-grid-solar-power>

^{iv} <https://roadnighttaylor.co.uk/published-articles/current-grid-connectivity-issues/#:~:text=The%20backlog%20of%20generation%20projects,grid%20and%20bolster%20generation%20capacity>

^v <https://committees.parliament.uk/writtenevidence/53272/html/>

^{vi} https://www.northeastlep.co.uk/wp-content/uploads/2021/05/Mine-Energy-White-Paper_FINAL.pdf

^{vii} <https://pges.wpengine.com/wp-content/uploads/2022/07/PGES-briefing-note.pdf>

^{viii} <https://www.iea.org/commentaries/how-energy-efficiency-will-power-net-zero-climate-goals>

^{ix} <https://pges.org.uk/energy-policy-priorities> <https://pges.wpengine.com/wp-content/uploads/2022/07/PGES-briefing-note.pdf>